



**A STANDARD OPERATING PROCEDURE
for**

Indoor Aboveground Storage Tanks

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INTRODUCTION

This Standard Operating Procedure (SOP) has been developed for the purpose of outlining the general safety and environmental precautions to be followed regarding aboveground storage tanks (ASTs) located within GSA buildings.

Although not regulated under a comprehensive federal program in the same manner as underground storage tanks, ASTs are subject to a number of regulatory provisions at the federal, state, and local levels. All ASTs are potentially subject to regulation under the Spill Prevention, Control, and Countermeasures (SPCC) program of the Clean Water Act (CWA). In addition, they may also be subject to regulation under portions of the Clean Air Act (CAA), the Emergency Planning and Community Right-to-know Act (EPCRA), the Resource Conservation and Recovery Act (RCRA), and other programs. Most ASTs are regulated in a manner that addresses risks associated with sudden and catastrophic discharges of their contents to navigable waters, and with fire and safety issues. In contrast, underground storage tanks (USTs) are regulated, generally at the state level, under federally-approved programs that focus on risks associated with chronic releases of products that threaten subsurface water resources.

OSHA standards may be obtained from the local OSHA Area Office or purchased from the Superintendent of Documents, Government Printing Office, Washington, DC 20402.

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General Services Administration
Heartland Region
Indoor Aboveground Storage Tanks

1. **SCOPE**. Aboveground storage tanks (ASTs) are frequently used to supply a limited amount of fuel (typically, diesel) for the operation of emergency generators. Such ASTs are most often located within our buildings. This SOP will detail the requirements for installing and maintaining these indoor ASTs. These provisions outlined herein pertain **only** to tanks meeting **all** the following criteria:

- a. Tank is classified as an aboveground storage tank, and
- b. Tank contains **diesel fuel** or **fuel oil** used for the operation of an emergency generator or building heating, and
- c. Tank is located in an indoor location, and
- d. Tank capacity is 110 gallons or greater, and
- e. Tank operates at atmospheric pressure (0 - 1.0 psig).

NOTE: Tanks not meeting the above criteria have additional requirements applied. Other "criteria" includes underground storage tanks, tanks used to store waste oil or hazardous wastes (e.g., solvents, paints, cleaners, etc.), tanks smaller than 110 gallons, tanks used to store water, etc.

2. **REFERENCES**.

- a. OSHA 29 CFR 1910.106, Flammable and Combustible Liquids.
- b. EPA 40 CFR 112, Oil Pollution Prevention.
- c. NFPA 30, Flammable and Combustible Liquids Code.
- d. NFPA 37, Standard for the Installation and Use of Stationary Combustion Engines and Gas Turbines.
- e. NFPA 704, Identification of Fire Hazards of Materials.

3. **DEFINITIONS**.

- a. Aboveground storage tank. An above ground storage tank (AST) is a "tank," containing 110 gallons or more, whose entire

surface area is completely above ground. Also, the entire surface area of the tank (including the tank bottom) can be visually inspected. Tanks on or above the floor of underground areas, such as basements or tunnels, are still considered to be aboveground storage tanks.

b. Class II Combustible Liquid. A liquid having a flash point (at room temperature and pressure) greater than or equal to 100 degrees Fahrenheit (°F) and less than 140°F.

4. GENERAL REQUIREMENTS.

a. All tanks shall have a sign stating the tank contents and shall be marked in accordance with NFPA 704 (commonly referred to as the "Diamond Hazard Rating" or "Hazardous Materials Classification Diamond").

b. The interiors of ASTs are classified as Permit-Required Confined Spaces; access to these interiors is subject to GSA Heartland Region's Confined Space Entry Program.

c. The American Petroleum Institute (API) has written several industry consensus standards related to the design, construction, and maintenance of ASTs and their associated piping systems. All ASTs used by GSA shall conform to applicable API standards.

5. SPILL PREVENTION PLANS.

a. A Spill Prevention, Control, and Countermeasures (SPCC) Plan must be developed and implemented for the facility if aboveground storage capacity of petroleum product exceeds:

(1) 1,320 gallons combined for all ASTs at the facility, or

(2) 660 gallons in a single tank.

b. Facilities having ASTs exceeding the above capacities should contact the regional OSH Program office for assistance in developing the required SPCC Plan.

6. ROOM VENTILATION.

a. Rooms containing ASTs must be provided adequate ventilation prior to personnel entering the room for inspection or repair of tanks. This can be accomplished by:

(1) A continuous mechanical exhaust ventilation system.

(2) An automatically-operated ventilation system that activates before the door to the AST room can be opened, electrically connected to an air monitor sensing lower explosive limit (LEL) and oxygen (O₂) levels within the room. A safety interlock would prevent the door from opening until the ventilation system had operated sufficient to ensure a safe atmosphere within the room. "Safe atmosphere" for the AST room described in this SOP is defined as:

(a) LEL less than 10%, **and**

(b) O₂ levels between 19.5% and 22%.

b. The ventilation discharge must terminate outside the building. These discharges shall not be located within 15 feet of air intakes, doors, etc. where the vented vapors may readily be re-introduced into the building.

7. TANK VENTING.

a. ASTs shall be adequately vented to prevent build-up of pressure or vacuum within the tank.

b. Vents shall discharge vapors outside the buildings. These discharges shall not be located within 15 feet of air intakes, doors, etc. where the vented vapors may readily be re-introduced into the building.

8. LEAK/SPILL CONTAINMENT.

a. Provisions shall be provided to prevent leaks or spills from the AST from reaching other building areas or the environment (sanitary or storm sewers). This is usually accomplished by providing:

(1) A dike,

(2) Secondary containment,

(3) A sill,

(4) A catch basin/tank, or

(5) Other methods approved by the regional OSH Program Office.

b. The capacity of the method used (see preceding paragraph) shall be sufficient to contain the entire contents of the AST should a catastrophic leak or spill occur.

c. Floors must be liquid-tight (except for drains feeding catch basins/tanks) and the room must be liquid-tight where walls join the floor. Floor drains in rooms containing ASTs (unless isolated from the AST by a permanent dike, berm, sill, etc.) shall **NOT** be connected to sewer systems.

d. Each connection to a tank (other than vents) inside of buildings through which liquid can normally flow shall be provided with an internal or an external valve located as close as practical to the shell of the tank. Such valves, when external, and their connections to the tank shall be of steel.

e. The AST shall have some form of construction or device that will relieve excessive internal pressure caused by exposure fires.

f. Spills and leaks shall be cleaned up promptly. Supplies (e.g., absorbents) will be maintained on-hand to clean up minor spills and leaks.

g. ASTs shall be visually inspected at least once per month for signs of leakage or spillage.

h. Liquids shall not be allowed to accumulate in the containment area; any collected shall be removed regularly.

9. LEAK/SPILL PREVENTION.

a. Tanks inside buildings shall be equipped with a device, or other means shall be provided, to prevent overflow into the building.

b. The inlet of the fill pipe shall be located outside of buildings at a location free from any source of ignition and not less than 5 feet away from any building opening.

c. The inlet of the fill pipe shall be closed and liquid-tight when not in use.

d. Openings for manual gauging, if independent of the fill pipe shall be provided with a vapor-tight cap or cover. Each such opening shall be protected against liquid overflow and possible vapor release by means of a spring-loaded check valve or other approved device.

10. LEAK/SPILL REPORTING.

a. All releases exceeding 10 gallons per occurrence and emergencies shall be reported to the regional OSH Program office.

b. Any AST found to be leaking shall immediately be repaired, replaced, or permanently closed.

c. The regional OSH Program office shall coordinate all external regulatory reporting requirements (i.e., EPA, State).

11. TANK FILLING.

a. General.

(1) Tank filling shall not begin until the operator has determined tank ullage (available capacity) based on direct liquid level measurement converted to gallons (or some equivalent method).

(2) The transfer operator shall be **physically present** to monitor the **entire** transfer process.

b. Tanks 660 Gallons or Greater:

(1) Fixed or movable equipment is required (reservoirs, pans, catchment basins, etc.) that will contain the release of product when:

(a) The transfer hose is detached from the fill pipe, or

(b) The tank is overfilled.

(2) Overfill prevention devices shall be installed on the AST's fill pipe (**NOTE:** *If the tank never receives more than 25 gallons at a time, these requirements do not apply*). Such devices shall **automatically** both:

(a) Activate an audible and visual alert when the AST is 90 percent full, **and**

(b) Shut off the fuel flow to the AST when the AST becomes 95 percent full.

12. **FIRE PROTECTION.**

a. Flammable or combustible liquid tanks located inside of buildings (except in one-story buildings designed and protected for flammable or combustible liquid storage) shall be provided with an automatic-closing heat-actuated valve on each withdrawal connection below the liquid level (except for connections used for emergency disposal) to prevent continued flow in the event of fire in the vicinity of the tank.

b. The inlet of the tank's fill pipe shall be located outside the building at a location free from any source of ignition and not less than 5 feet away from any building opening. The inlet of the fill pipe shall be closed and liquid-tight when not in use. The fill connection shall be properly identified (labeled).

c. Connections for all tank openings shall be vapor- or liquid-tight.

d. Storage tanks shall be separated from other occupancies within the building by construction having at least a 2-hour fire resistance rating. As a minimum, each opening shall be protected by either a listed, self-closing fire door or a listed fire damper having a minimum 1-hour fire protection rating. Doors leading to rooms containing ASTs shall not open directly to building areas accessible to the general public.

e. Access aisles of at least 3 ft (0.9 m) shall be maintained for movement of fire-fighting personnel and fire protection equipment.

f. Rooms containing ASTs must be fully sprinklered.

g. At least one portable fire extinguisher having a rating of not less than 12-B units must be located not less than 10 feet, nor more than 25 feet, outside the door to the room containing the AST.

h. Precautions shall be taken to prevent ignition of vapors within the AST room by eliminating or controlling sources of

ignition. Such sources include open flames, smoking, cutting and welding, hot surfaces, sparks, frictional heat. However, explosive-proof wiring is **not required** in AST rooms containing diesel fuel or #2 fuel oil.

i. All electrical equipment and wiring associated with an AST or located in a room containing an AST shall be of a type specified by, and installed in accordance with, NFPA 70 (National Electrical Code).

j. All tanks, machinery, and piping shall be grounded.